

BIOLOGY

A LEVEL COURSE DESCRIPTION

Salters-Nuffield Advanced Biology (SNAB) is a new approach to teaching and learning Biology for Post – 16 students. It is probably the biggest curriculum development in biology teaching for over 30 years.

SNAB is a context-led, well-resourced advanced biology course for the 21st century

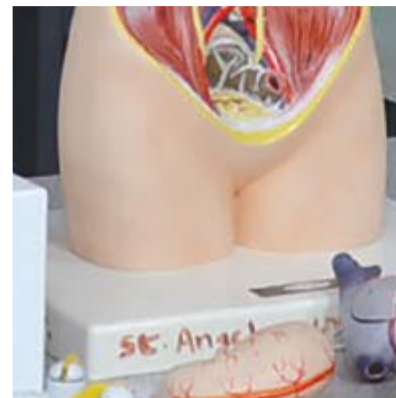
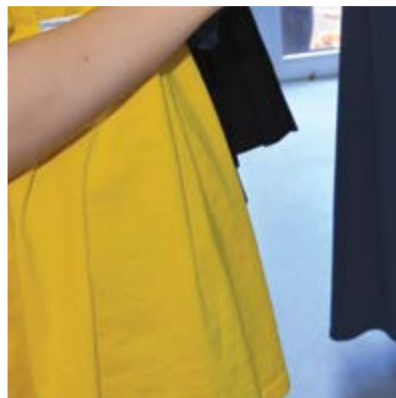
SNAB was developed by the University of York Science Education Group, the Nuffield Curriculum Centre Edexcel and Heinemann, working with teachers, academics and professional biologists.

Traditionally, biology course specifications have been constructed from a scientist's viewpoint with concepts being developed in a pattern that is seen to be sensible by a scientist. A topic on biochemistry might be followed by one cell structure that is followed by one on enzymes.

SNAB does not present content in these traditional themes. The course is context-led. A story or contemporary issue is used as a starting point for each topic, with biological principles introduced when required to aid understanding of the context. Presenting content via stimulating contexts aims to capture student's interest and make the relevance of learning immediately obvious.

ENTRY REQUIREMENTS

If you wish to study Biology and no other science subject, you need to achieve at least a 7,7 in GCSE Combined Science or 777 in GCSE Triple Science course. If you wish to study Biology alongside one or more other science disciplines then you will need to have studied GCSE Triple Science, and achieved at least an 888. High levels of Maths and English are also of great benefit in this A-Level.



Progression

"Will YOU Develop a Vaccine for HIV?" If you're looking to break into the world of science, an A-Level in Biology is a great start. Your Biology A-level could be an entry qualification to further education, or help you gain employment in the field of science and beyond including teaching. If you are considering studying medicine, forensic science, environmental or food science, zoology, agriculture or microbiology among a huge range of others, then A-level Biology is essential. A background in biology can also be useful for a range of non-science careers, ranging from business to politics and art to technology.



AS LEVEL**AS Topic 1; Lifestyle, Health and Risk**

This topic starts with 2 people's experiences of cardiovascular disease. It looks at the biology related to the heart, circulation and risk factors that contribute to the development of cardiovascular disease. This introduces the biochemistry of food

AS Topic 2; Genes and Health

This topic considers the following biological principles: the properties of and transport of materials, across cell membranes and gas exchange surfaces, DNA structure and replication, protein synthesis, enzymes and monohybrid inheritance through the context of the genetic disease cystic fibrosis. The potential that gene therapy offers as treatment for cystic fibrosis is examined. The topic also allows for discussion of the social and ethical issues surrounding the genetic screening for genetic conditions.

AS Topic 3; The voice of the Genome

This topic follows the development of multicellular organisms from single cells to complex individuals. Cell structure and ultrastructure, cell division, the importance of fertilisation, the roles of stem cells, gene expression, cell differentiation and tissue organisation are all considered within this topic, as is the role of the genotype and the effect of environment on phenotype.

AS Topic 4; Biodiversity and natural resources

The topic focuses on biodiversity and the wealth of natural resources used by humans. The meaning

of biodiversity and how it can be measured is considered first and how all this diversity has come about through adaptation and natural selection. It has sections on both traditional and novel uses of plants and plant fibres and the use of chemical extracts from animals and plants.

The concern for disappearing biodiversity and loss of potential natural resources is used to highlight the need for biologists to identify, name and classify species. The topic finishes by looking at the role of zoos in conservation of endangered species. General biological principles covered include the relationship of plant anatomy to function and the structure and role of cellulose and starch.

A2 LEVEL**A2 Topic 5; On the Wild side**

This topic builds an appreciation that photosynthesis is the primary process that underpins the majority of ecosystems, and provides students with an understanding of how ecosystems work. The topic continues by looking at whether climate change will lead to extinction of species or evolution by natural selection, and looks at the evidence for global warming and its effects on plants and animals. By the end of the topic students should appreciate how scientific understanding can make us aware of our responsibilities as stewards of the environment.

A2 Topic 6 ; infection, immunity & forensics

This topic starts by looking at how forensic pathologists use a wide variety of analytical techniques to determine the identity of a person or other animal, and to establish the time and cause of death of an organism, including humans.

It then considers how bacteria and viruses use a variety of routes into their hosts and how hosts have evolved barriers and internal mechanisms to combat infections. These protections are not always successful and many people in the world still die from infectious diseases. This topic also investigates the evolutionary battles that take place between invading pathogens and their hosts.

A2 Topic 7; Run for your Life

This topic is centred on the physiological adaptations that enable animals and humans, particularly sports people, to undertake strenuous exercise. It explores the links between an animal's physiology and its performance. The topic summarises the biochemical requirements for respiration and looks at the links between homeostasis, muscle physiology and performance. It ends by looking at how medical technology is enabling more people to participate in sport, and by raising the issue as to whether the use of performance-enhancing substances by athletes can be justified.

A2 Topic 8; Grey Matter

The scene is set by considering how the working of the nervous system enables us to see. Brain imaging and the regions of the brain are considered. The topic also demonstrates how an understanding of brain structure and functioning is relevant to such issues as the response to stimuli, the development of vision and learning. It investigates how imbalances in brain chemicals may result in conditions such as Parkinson's disease and its treatment with drugs are investigated. Students discuss the ethical issues raised by the Human Genome Project and the risks and benefits of using genetically modified organisms.

Routes for Success - Sciences

The Routes to Success Programme is designed for ALL students in Year 12 at St Angela's Ursuline 6th Form. The SCIENCES programme aims to offer students opportunities to work with both industry and universities, opportunities will include links with; London Hospital, Institute

of Civil Engineers, Sutton Trust, Kings' College London, Barts and Royal London and Imperial. Summer school opportunities will include links with; City Medicine, City Nursing, Chrysalis, Surrey Science, Queen Mary Engineering and Warwick Medicine.

Please note- All Year 12 students will select one main 'Route for Success' from these in order to experience a specialist enrichment and learning support programme. It will, of course, be possible to select a subject/subjects from another route on your timetable. We base our Routes to Success Programme on the university curriculum structure and university links are not exclusive to one route, so can be accessed by all students.

